CLAIMS

What is claimed is:

1   1.   A method for performing a frequent itemset operation, the method comprising the

2   steps of:

3   dynamically selecting which occurrence counting technique to use from a plurality of

4   available occurrence counting techniques; and

5   during said frequent itemset operation, using said selected occurrence counting

6   technique to count occurrences of at least one combination to determine

7   whether said at least one combination satisfies frequency criteria associated

8   with said frequent itemset operation.

1   2.   The method of Claim 1 wherein:

2   the frequent itemset operation is performed in a plurality of phases, wherein each

3   phase is associated with combinations that have a particular number of items;

4   the step of dynamically selecting includes dynamically selecting which occurrence

5   counting technique to use for at least one phase of said plurality of phases; and

6   the step of using includes using said selected occurrence counting technique to

7   determine whether candidate combinations for said at least one phase satisfy

8   said frequency criteria.

1   3.   The method of Claim 2 wherein:

2   said at least one phase is a phase during which combinations having N items are

3   processed;

4   a first occurrence counting technique is selected for said phase of said frequent

5   itemset operation;

6   the method includes dynamically selecting a second occurrence counting technique in

7   the phase of a subsequent frequent itemset operation during which

8   combinations having N items are processed; and

9   the second first occurrence counting technique is different from said second

10   occurrence counting technique.

1   4.   The method of Claim 1 wherein the step of dynamically selecting which occurrence

2   counting technique includes generating cost estimates for each occurrence counting

3   technique of said plurality of available occurrence counting techniques, and selecting the

4   occurrence counting technique that has the lowest estimated cost.

1   5.   The method of Claim 4 wherein the step of generating cost estimates includes

2   generating a cost estimate for at least one of said available occurrence counting techniques

3   based on an estimated I/O cost of using the occurrence counting technique.

1   6.   The method of Claim 4 wherein the step of generating cost estimates includes

2   generating a cost estimate for at least one of said available occurrence counting techniques

3   based on an estimated CPU cost of using the occurrence counting technique.

1   7.   The method of Claim 4 wherein the step of generating cost estimates includes

2   generating a cost estimate for at least one of said available occurrence counting techniques

3   based on a total cost that includes a plurality of weighted constituent costs.

1   8.   The method of Claim 1 wherein the plurality of available occurrence counting

2   techniques include a bitmap intersection technique and a prefix tree technique.

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1   9.   The method of Claim 1 wherein the step of dynamically selecting includes

2   dynamically selecting based on conditions existing in a computing environment in which the

3   frequent itemset operation is to be performed.

1   10.   The method of Claim 9 wherein the conditions include one or more of

2   workload of a computer system executing the frequent itemset operation; and

3   resources available on said computer system.

1   11.   The method of Claim 2 further comprising the step of determining that a particular

2   occurrence counting technique will not be considered during any phase of the frequent

3   itemset operation, and performing the frequent itemset operation without performing startup

4   operations for said particular occurrence counting technique.

1   12.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 1.

1   13.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 2.

1   14.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 3.

1   15.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 4.

1   16.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 5.

1   17.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 6.

1   18.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 7.

1   19.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 8.

1   20.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 9.

1   21.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 10.

1   22.   A computer-readable medium carrying one or more sequences of instructions which,

2   when executed by one or more processors, causes the one or more processors to perform the

3   method recited in Claim 11.